Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91109-8099
(818) 354-4321

JPL

NAS7.000065
NASA - JPL
SSIC No. 9661

November 16, 1994

Refer to: 94-113.SF:ll

Brian Swarthout
U.S. EPA, Region IX
75 Hawthorne Street, M/S H-9-1
San Francisco, CA 94105

Dear Brian:

Subject: RPM Meeting Minutes from November 02, 1994

On behalf of the National Aeronautics and Space Administration (NASA), I am pleased to provide the minutes from the RPM Meeting of November 02, 1994. As always, the minutes are open for comments.

If you have any questions or comments regarding these minutes please feel free to contact me or Judy Novelly at (818) 354-0180 or (818) 354-8634 respectively.

Sincerely,

Judith A. Novelly for C. L. Buril

Charles L. Buril, P.E.
Manager, Environmental Affairs Office

Attachment

bcc:
D.G. Graham
J. Heie
J.D. Lafontan
K.A. Lievense
J.A. Novelly
R.C. Pool
M.C. Scarbrough
K.C. Schmader
N.J. Walizer

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Penny Nakashima
Cal EPA
1011 N. Grandview Avenue
Glendale, CA 91201

Dear Penny:

Subject: RPM Meeting Minutes from November 02, 1994

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November 16, 1994

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Jon Bishop
L.A. Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Jon:

Subject: RPM Meeting Minutes from November 02, 1994

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November 16, 1994

Refer to: 94-113.SF:ll

Gale Madyun
L.A. Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754

Dear Gale:

Subject: RPM Meeting Minutes from November 02, 1994

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Manager, Environmental Affairs Office

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JPL

November 16, 1994

Refer to: 94-113.SF:ll

Steven Niou
URS Consultants
164 W. Hospitality Ln., Suite 6
San Bernardino, CA 92408

Dear Steven:

Subject: RPM Meeting Minutes from November 02, 1994

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Charles L. Buril, P.E.
Manager, Environmental Affairs Office

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K.C. Schmader
N.J. Walizer

ENVIRONMENTAL AFFAIRS OFFICE
MEETING ATTENDANCE RECORD

SUPERFUND RPM MEETING
November 02, 1994

Please print the information requested below and pass this sheet along to the next person. Thank you.

NAME	COMPANY/AGENCY NAME, ADDRESS, PHONE	
Charles L. Buril	JPL - 4800 Oak Grove Drive, M/S 301-420, Pasadena, CA 91109	(818) 354-0180
Judith A. Novelly	JPL - 4800 Oak Grove Drive, M/S 301-420, Pasadena, CA 91109	(818) 354-8634
Stephen Niou	URS 164 W. Hospitality Ln., #6, San Bernardino, CA 92408	(919) 381-4566
BRIAN SWARTHOUT	USEPA 75 Hawthorne St SF CA 94105	(415) 744-1988
Penny Nakashima	DTSC 1011 N. Grandview Ave, Glendale 91201	(818) 551-2881
Jon Bishop	RWQCB-LA, 101 Centre Plaza Drive, Monterey CA	(213) 265-7538
B. G. Randolph	Ebasco, 3000 W. MacArthur Blvd, Santa Ana, CA 92704	(714) 662-4141
Mark Cutler	Ensearch, 3000 W. Macarthur Blvd. Santa Ana Ca 92704	(714) 662-4056
Peter Robles	NMO-JPL 4800 Oak Grove Drive, Pasadena CA 93551	(818) 393-2920

RPM Meeting Minutes
NASA/Jet Propulsion Laboratory

Jet Propulsion Laboratory, Room 180-801
November 2, 1994

Attendees: Organizations represented at the Remedial Project Managers' (RPMs) Meeting included the following:

- U.S. EPA (EPA)/Federal Enforcement Branch, Region 9, San Francisco, CA
- California EPA/Department of Toxic Substances Control (DTSC), Region 3
- NASA/NASA Resident Office, Jet Propulsion Laboratory
- Los Angeles Area California Regional Water Quality Control Board (RWQCB)
- EBASCO Environmental, Contractor to JPL

A list of individuals attending this RPM meeting is attached to these minutes.

OBJECTIVES

The purpose of the NASA/Jet Propulsion Laboratory meeting held on November 2, 1994 at the Jet Propulsion Laboratory in Pasadena, California, was to discuss the following topics:

- Status of Work Associated with Field Sampling and Analysis Plan for OU-1
- Status of Work Associated with Field Sampling and Analysis Plan for OU-2
- OU-3 Schedule
- ARARs Discussion
- Schedule for Next RPM Meeting
- Status of Previous Meeting Action Items
- Other Topics

APPROVAL OF MINUTES

The minutes were approved as submitted.

1. TOPIC: STATUS OF WORK ASSOCIATED WITH FIELD SAMPLING AND ANALYSIS PLAN FOR OU-1

Buril: We started the second round of sampling for OU-1 today. We have had a few delays related to funding considerations. Right now, it doesn't appear that we'll have a schedule impact. The first round of samples was completed back in July. We have some results back from that. They are currently in validation, and we are waiting for the validaters to give us the green light to submit the data to you. If you will take a look at the map here, I would like to show you what we think we are seeing so far. (He steps to maps.) Remember, this is all preliminary. It's difficult to understand without validated data where we can say "yes, this is absolute."

Bishop: I am still confused about what OU-1, OU-2, and OU-3 mean. **Buril:** OU-1 is the on-site ground water. On-site is defined as being from the eastern end of the Arroyo to the western edge of JPL. Looking at OU-1, we found in the last round of sampling that the contamination seems to be most heavily concentrated at well MW-7. That's historical. We've seen that all along. What's interesting is that when you get outside of MW-7 you begin to see lesser concentrations in these wells (indicates). In fact, you see almost a rectangle formed by wells 7, 13, 16, and 8. They seem to define the area where the bulk of the contamination appears to be. Let's look at the different contaminants. First, we have carbon tetrachloride. We're concerned with this because of its very low consideration for MCL. It appears to be right in here (draws circle around center of JPL on map). All of the wells outside this area are non-detect. Trichlorethylene has a slightly different distribution. It has relatively the same shape (draws on map), but it tends to come out down here (indicates lower left corner of map).

Cutler: I'm not sure it's as far as well 8. There might be a few parts per billion in well 8, but not much more. **Buril:** (redraws map) It may be more like this, then. In any case, it's interesting to see that it is very localized in the center of the Lab. We see very little in the wells outside this area. I think well 10 was something like 20 ppb. **Cutler:** It was low. **Buril:** With regard to perchlorethylene, we did not find any wells above MCL levels anywhere. In fact, we only found it in very spotted areas. We did see chloroform, but it was much lower than the 0.1 ppm established for drinking water. It seemed rather strange, given the dynamic nature of the ground water here, that we would actually have a pocket just sitting there. So, we tried to analyze the mechanisms that might be in play. I'll use blue for the ground water contours that we have been able to establish. (He draws on map, showing contours on both sides of JPL.) The interesting thing is that we saw identical contours on each side of the Lab, with nothing in between. From that standpoint, it appears that the water table across the site is flat. In other words, it's not going anywhere. This, then, tends to follow the distribution of the contaminants, which are just sitting there. There is sort of a bubble.

This seems strange, but if you look at the geology of the area, you see that we have the San Gabriel Mountains here (indicates), and these mountains here (indicates). The regional flow is coming in right through the (San Gabriel) mountains on both sides

of the Lab, and the two flows seem to stall each other. It's like being at the apex of two streams coming together that create an eddy at the point where they meet. This explanation seems to be supported by the ground water patterns that we see and also by the distribution of the contaminants. We have looked at the ground water contours several times, and they have been very consistent. During most of 1991, and all of 1992 and 1993, we had spreading occurring in the spreading basins in the Arroyo. So the mounding tends to make some sense, because there was water always available to have mounding occur. When you look at the distribution of the contaminants in the wells in the Arroyo, you're essentially seeing nothing. There have been a few hits in a couple of the multiport screens of 1 or 2 ppb, but essentially nothing. When you look at the City of Pasadena wells, which are the four along the eastern edge of the Arroyo, we're seeing essentially the same thing. So, it appears that we are dealing with a very localized situation.

I will pass along a piece of anecdotal information that I got from the Raymond Basin Management Board. If you take a look at the far left-hand side of the right-hand map, you will see a dot just above the Flintridge School for Boys. That's a Valley Water Service Company well. They have consistently been picking up perchlorethylene at concentrations of 10 to 20 ppb up to 200 ppb. We are orders of magnitude under that. And the flow regime would tend to indicate that we don't have the possibility of impacting that well. Any contribution JPL is making is probably extremely small, if it is even measurable. So, there appears to be something else in La Canada, potentially, that is creating a problem for that particular well.

Bishop: You said that during the time you have had water level measurements available you have had spreading going on. Is that consistent with the past? **Buril:** No. In fact, during the early to mid-eighties there was very little spreading, due to the drought conditions. A hypothesis I have is that, because of the extreme drought conditions, we actually saw a shift from this condition to one that allowed a slow but nonetheless different flow regime to occur. I think that is when we actually saw some of the contamination hit the Pasadena wells. As soon as this situation occurred with the bounding and what I call the "dead zone" across the site, the levels in the Pasadena wells dropped. In fact, I just received the information for September, and I believe there was 1.3 ppb of carbon tetrachloride in the Arroyo well, which is the most northern well on the edge of the Arroyo. There was also two point something of TCE. That was it. All of the other wells had nothing in them.

Bishop: This brings up another interest or concern to think about. We have essentially some flow like this and like this (indicates), and this area down here might be the direction that you're having some outflow from the site. **Buril:** That's possible. In fact, that is one of the things we want to investigate when we look at well MW-21, which is a well that is going to be installed.

Robles: It looks to us, then, that if we have a gallery of injection wells to keep this regime going as part of our remediation we may be able to completely contain the plume on the JPL site, so that we can treat it. **Buril:** We can use the computer to determine where the wells would actually be placed, but in concept, if we place wells along the eastern boundary of the Arroyo and perhaps some along the western edge, and if we find a southerly component coming out of the southern portion of the Lab, we can simply build a hydrologic dam around the Lab. You're not going to get it through the

bedrock of the San Gabriels, that's for sure. So, if you establish the dam and place a pump-and-treat system in the center of the Lab, you create essentially a funnel. Hopefully, the water and contaminants would be contained within that funnel and would not be able to come out at the edges.

Bishop: It might be worth thinking about the spreading basins. Are they going to stay? **Buril:** They may even be expanded. **Bishop:** That might be less expensive than the injection wells. **Buril:** That's an excellent thought. The only concern we have is the adjudication of the basin. That's the thing that sort of kicks us in the head, especially during the summer months with the evaporation and the net loss to the aquifer system. We would have to pay for that loss or come up with some way of augmenting the water supply. So, we have been thinking about the injection process only because it negates the evaporation process, making the net loss to the aquifer system essentially zero.

Robles: This is still just theory. **Swarthout:** Are TCE and carbon tetrachloride the main contaminants that were used on the Lab? **Buril:** There is some anecdotal evidence. We don't have hard evidence, but if you look at the wells on-site and the locations for chemical use, MW-7 was an area where they used a lot of that stuff back in the forties and fifties. So, we would expect to see higher concentrations in that general area. In fact, wells 7 and 16 are the two wells that show the highest contamination. **Swarthout:** What would the carbon tetrachloride be used for? **Buril:** It's an excellent degreaser. **Robles:** The main reason for using it was for "squeaky clean" projects. **Bishop:** It was a precursor to the TCE and PCE for degreasing **Swarthout:** Was perchlorethylene not used on the Lab much? **Buril:** As far as we can tell, no. We would expect that if perchlorethylene was used on the site we would see it. But we simply don't see it. The concentrations are vanishingly small, if it is detectable at all.

Robles: In the old days, many people would use the cleaning or degreasing solvents and never recycle them. They would just dump them. So, you can get pockets like this. You would see concentrations of the chemicals, and they would just spread all over the place. We don't see any of this, and it's surprising to us. It looks like it was almost exclusively carbon tet.

Swarthout: Tell me about the City of Pasadena wells—when were the samples taken, and when were the treatment systems put in? **Buril:** The system wasn't installed until 1990-91. As far as identifying the concentrations of materials in the wells, the evidence first appeared in 1982-83. **Swarthout:** And what were they finding? **Buril:** They were finding trichlorethylene. They also found carbon tet later on. Then, about 1986 or 1987 the water quality criteria tightened, and the wells that were previously contaminated but did not have a problem with MCLs suddenly did. They essentially had to shut them down. So, the City of Pasadena came to JPL and said "we think we have a problem here, and we think you're the cause of it." It eventually came down to our agreeing to install the treatment system for the four Pasadena wells. To refresh you on these wells, the northern-most one is the Arroyo Well, and going downward on the map you have Well No. 52, the Ventura Well, and the Windsor Well, which is near the Five-Acre School. The other two, near MW-17 and next to the Franklin School, are Lincoln Avenue Water Company wells. They had contamination of tricholorethylene also.

Swarthout: When the treatment systems were installed, what were the contamination levels they were supposed to take care of? **Buril:** In the tens, I think. Not more than 20 or 30 ppb. **Swarthout:** So you think the spreading basin has separated

those wells from the contamination? **Buril:** Yes. And it makes a lot of sense from the standpoint that we see these water contours present in the upper part of the Arroyo. You can expect a pretty fair ability to absorb water up there given the geology of the area. It's very course sands, etc. (To Cutler) The difference in elevation there is thirty or so feet, isn't it? **Cutler:** Where? **Buril:** From MW-1 down to MW-12. **Cutler:** At least. **Buril:** It's the equivalent of a waterfall in the ground. It's really coming out of there in a tremendous fashion. **Swarthout:** The contours along the base boundary with the wells—do you get pretty smooth contours? **Cutler:** Yes. That's probably the most common scenario. There are times when things get rather extreme after large storms, etc. Also, they turn the pumps on and off during the year, and it distorts things a little. But yes, coming out of the mouth of the Arroyo there is a very large mound. There is even some speculation that there might be some type of slightly impermeable layers, maybe some perching, but there is a very dramatic high right there.

Buril: But it is interesting to note that because of that, if you look at the chemical distribution again, well 1, well 15, and well 9 are essentially clean and came up non-detect. Well 11, if I recall, only had a hit in one of the screens, but it was very small. **Cutler:** It has had hits in three screens, and in one event it may have been only the upper two screens. I think in the first event it was the upper four screens, but with very small levels. I think 8-11 ppb was the highest. **Buril:** Now we're seeing non-detect based on the June sampling. **Niou:** Do they operate those recharge basins year-round? **Buril:** They like to, when they have enough water. In fact, I think they are operting right now. **Randolph:** They are. There's a little water in one of the ponds. There's been some flow the last couple of days out to one of the ponds.

Buril: The weather systems we've had over the past couple of weeks have dumped some rain up in the San Gabriels. There are some retention reservoirs up in the mountains, and I think they are beginning to release those in anticipation of the winter rains. **Niou:** So that water is basically rain water? **Buril:** Yes. All the water that comes in is runoff. The only question is whether it comes from the San Gabriels or from one of the storm drain systems from Altadena or Pasadena. **Niou:** One more question. Since this line (indicates on map) is inside these three wells, why did you put this line here? **Buril:** That may be an oversimplification of what we actually have. Well 10 had 20-some ppb of trichlorethylene. In fact, I think it's had some hits off-and-on throughout its history. There seems to be the potential for having something down there. Rather than draw a closed circle as if nothing is there, we chose to leave it open-ended, since that more accurately reflects what the data shows us at that particular time. **Niou:** I was wondering why you didn't do it this way (indicates on map). **Buril:** It's a little bit of an open question there. It's probably one of the things we'll be able to close with MW-21. If we have a major flow coming out and impacting down in that area, MW-21 will hopefully pick it up for us.

Bishop: It's logical that you would have some drainage losses. That's the natural function of the Arroyo. **Buril:** If you look at the geography and topography of the area, you have what I call the "Foothill funnel" coming down off the northwest portion of the right-hand map (indicates) and coming in this way (indicates). In other words, you have an eddy zone right here at JPL. It's not a perfect eddy, but it has a gradient that is not quite so steep. Then, when you have the mounding built in on top of that, coming from the other direction, the two appear to balance each other. It's very localized, over the

course of a few hundred acres. The Lab is 176 acres, and it appears to be centered right in the center of the Laboratory. Of course, this is a snapshot in time, and it does tend to vary over the course of a year, but as Mark indicated this general scenario seems to be the most common.

Niou: I'm just curious. Maybe this one (indicates MW-21) is too far south. How about something here (indicates)? Would that tell you more about the situation? **Buril:** I'm not sure it would, Stephen. If we are seeing nothing in the far western wells... **Niou:** Ten? **Buril:** Yes, at 13 and 10 we see something. At 5 we don't see much, if anything; at 4 we don't see anything, and as you go further east we don't see anything. Ten might be a localized pocket. I'm not sure if it is part of a larger concentration. **Niou:** That's why I was interested in this area. **Buril:** For the purposes of a remedial design, I'm not sure that that would really answer any questions that we couldn't answer reasonably by looking at well MW-21. When we install a system for OU-1, or at least decide that one is required, I would anticipate that whatever radius of influence we generate from this system is going to be fairly extensive. In fact, it will probably cover the bulk of the JPL site. If we have minor contamination down in that area, we are going to be extending the zone of influence beyond that area regardless.

2. Status of Work Associated with Field Sampling and Analysis Plan for OU-2

Buril: On OU-2, I'm happy to report that all of the soil borings and the installation of all of the wells is complete. At the suggestion of DTSC we went back to the PVC pipes that we used to fix the sample points at a given depth. That pipe was left open. It was capped on the end but left open in the hole. Some concern was expressed by Phil that this might create a pathway that would allow vapor to enter a joint and then migrate up and down. We just completed filling in all of the pipes with bentonite, so we have negated that possibility as far as we can tell. We did have some holes that were completed shallower than others, and we have a listing here of where we had the different points. We can supply this to all of you if you'd like.

Nakashima: Could you describe how you backfilled the pipes? **Randolph:** It was a long, arduous process. The material was measured into the pipe on a per-foot basis. We went down with a 5/16-inch tremmie pipe into which we discharged water a couple of feet on top of the material we were hydrating. This was done repeatedly until we reached the surface. **Nakashima:** How far down did you put the tremmie pipe before you started? **Randolph:** We had five lengths: 92 feet, 65 feet, 36 feet, 20 feet, and 5 feet. They were marked off in 5-foot increments, from which we could measure to within a couple of tenths of an inch where we were in the hole. We also measured the height of each section of material with a depth sounder before we tremmied it in water. **Buril:** So you think you got the pipe almost right on top of the bentonite you were hydrating, so that you wouldn't end up with water on the side. **Randolph:** Right—so that we wouldn't have a bridge and would get all the way to the bottom. We did it just as if we were backfilling one of our own drill holes, except that it was done on a micro scale.

Novelly: It was calculated by volume inside the pipe, and he measured exactly how much bentonite and water he was putting in. It was very detailed. **Nakashima:** When they installed the vapor wells, they connected each of the probes onto the pipe, and what they needed to do was go back and backfill it. **Randolph:** About 85 percent

of the joints that were in the pipe were hydrated with bentonite to begin with. **Novelly:** That's because of the way it was constructed. We were trying to have the probes away from a joint, because the joint was the most likely spot to break when we went into the hole. Because of the way the well was constructed, the probe is in sand, and everything around it is bentonite. The joints are in bentonite. **Randolph:** About 85 percent of them. **Buril:** So, for 85 percent you had the outside and the inside of the joint surrounded by bentonite. I don't think there is any consideration of having a vapor transport across the joint.

Buril: Just to give you an idea of how well we did in getting down to the different depths, there were a number of these holes that either hit water or bedrock prior to getting down to the required 100-foot level. Fifteen of the borings were ended prior to the 100-foot level. The shallowest was No. 12, which is boring B-5. **Randolph:** That's the one in the middle of Explorer Road in front of Building 11. **Buril:** We hit boulders off and on throughout the process, and we moved a couple of holes just to try to get around them. But in some instances we would hit rock and pound on it with the percussion hammer rig 200 or 300 times and gain three quarters of an inch. **Randolph:** Sometimes it was close to 400 blows to gain a quarter of an inch. **Buril:** In those situations, if we could move them, we did. For instance, we moved one near Building 277 about 10 feet, which meant getting recleared on all of the utilities. In other locations, where utility considerations were such that we couldn't get reasonably close to the pit, we went ahead and installed a well at that location.

Buril: At Building 97, we had, I recall, 200-300 ppm on the OVA. (To Randolph) I think you said at the time it smelled like diesel fuel. **Randolph:** Yes, it had a sweet odor. We picked it up in the drill pipe. **Buril:** I think that's the only thing we found during the course of field investigation. Everything else was clean. All of the soil cuttings were as clean as we would expect to find in a regular hole. There was a concern at Building 67 regarding potential radiological issues, and so we had radiological monitoring equipment in operation while the drilling was going on. They picked up nothing but background. **Bishop:** When you say "appeared to be clean," what do you mean? **Buril:** From an OVA standpoint. In other words, there was nothing obvious, such as the green-colored soil you often get in hydrocarbon areas, or anything that reeked of solvent. I think it is also important to give EBASCO, and B.G. (Randolph) in particular, a big pat on the back regarding the locations of these pits. In several cases, we actually punched right into the old bricks that lined these things. So, it appears that we had some very accurate information with regard to the locations. If we were more than a few feet away in any given direction I'd be very surprised, based on what we saw at many of these locations.

Buril: We're planning, obviously, to do the soil vapor sampling in relatively short order. I believe it is scheduled to start about the middle of December, and that's giving the two-month waiting time from the time of construction to allow the soil vapor to equilibrate. Once that sampling is complete, we will be conducting the second sampling two months after that. Overall, the schedule on OU-2 looks very good, and we don't anticipate any real problems at this point.

3. OU-3 SCHEDULE

Buril: On operable unit 3, we had hit a few snags, and they are principally internal snags. OU-3 is the blue well numbers on the map to the right. We had a few things that came across in terms of contractual considerations. The first one that began to impact the schedule was that there was a longer-than-expected negotiation between Lang and EBASCO. That gave us approximately a three-week delay on the schedule. There was a second issue regarding the contract between JPL and EBASCO. What happened was that the contract was going to expire in the middle of the drilling operations, so we had to negotiate the contract extension and increase the dollar amounts. This was necessary so that the entire project, from the expiration of the contract to the submission of the RI at the end of next year would be covered. Those negotiations took much more time than we anticipated, and they were just completed last week. There were some questions back and forth about rates, and DCAA got involved. As many of you may know, when DCAA gets involved it can be a very time-consuming process. The upshot is that we are still waiting for the final contract extension to be implemented.

The subcontract that EBASCO has with Lang Drilling is essentially ready to go, but because of federal procurement regulations we can't tell them to start until after that EBASCO-JPL contract is in place. So, we basically hit a wall in the procurement sense, and now we're looking at not being able to get into the field until sometime in December. The impact on the schedule is obvious. We will be two months behind by the time we actually get into the field, compared to the schedule we identified in August.

Now, there is a thought here, and I'd like you to just place this concept in your minds, regarding how we might be able to work the OU-3 schedule and keep things more on track. It revolves around the idea of what we want to use the OU-3 wells for. Let me go back to our discussion of OU-1. Essentially, the Arroyo wells are clean. The wells for the City of Pasadena have very minor contamination present, no more than a few ppb of any contaminant. Given that consideration, if you look at the placement of the wells further to the east, you would expect that the wells would have less contamination in them than what you see at the eastern edge of the Arroyo. I think that follows logically. Also, if you take a look at wells further to the east that are public supply wells, they have either no contamination or vanishingly small amounts, below MCLs. To my knowledge, there are no wells currently closed from the right-hand side of the map eastward. In that regard, what we could view the OU-3 wells as providing us is not data from which to determine plume delineation, but rather verification that the wells out there will, in all likelihood, not be contaminated.

When you look at a remedial concern, I would view this as a scenario where you would continue to monitor those wells and wait and see if, indeed, you end up with a problem. And, indeed, we have our Arroyo wells that are clean, which is a first line of defense. Then you have the City of Pasadena wells, which, when they are operating, are monitored on a monthly basis. Then you have our own wells for monitoring, as well. And so, you have the ability to know if you have a situation where you are going to have to take some action in OU-3. Now, the four Pasadena wells already have a water treatment system in place. The Lincoln Avenue wells, the two located on Harriet Street, also have a water treatment system in place. So, the potential for exposure to the population of Altadena or Pasadena has essentially been negated. If something does come through, we don't have any concern that it will end up in somebody's drinking water supply. And, in fact, we'd be able to catch it with our monitoring wells.

Now, the idea behind this is that if we're only going to be using those wells to prove the hypothesis that there is not much out there, if anything, then one sampling event, rather than two, would be adequate. You would, of course, continue to monitor those wells, to prove that you continue to have no problem. The thing that kills us on the OU-3 schedule is the wet season/dry season consideration. Now, we have data going back historically for JPL, so we can look to see what the concerns are in various seasons. Of course, these data do not have the level four data validation. We also have, on a monthly basis, what the Pasadena wells are coming up with when they are operating. We currently have data for February through September of this year. Based on all of this, we know what the source areas are doing. We have a pretty good idea of what the eastern boundary of the OU-1 is doing. If we use those OU-3 wells to verify our hypothesis that there isn't much out there, I think that one sampling round to determine the need to actually have remedial systems in place should be adequate. We would continue to monitor to make sure that nothing else came up and that nothing else needs to be done as a result of changes over time.

Robles: We are looking at a three to four month delay if we have to do two sampling events. But if you want us to do that, we're willing to do it, but we will have a delay. The question is whether it is worth it. Chuck and I have talked about it, and my personal opinion is that it is an even call either way. I would like to see the schedule stay on course, but the question in my mind is how you feel about it when the information gets into a record of decision? Because that is ultimately my goal. If it's going to get into a record of decision and cause a problem with respect to public scrutiny, then we should be more cautious. But if you're comfortable with it, we're comfortable with it.

Swarthout: If we can build a strong enough case, including data from the Pasadena wells, and if we can agree that there will not be just one round of sampling... **Robles:** Oh, we're not going to stop. And the other thing is that if anything shows up, all bets are off. **Buril:** If well 20 shows up with 100 ppb, then we have a whole different scenario. But based on everything we know today, it would be very surprising to me if we found anything more than very small concentrations, if any at all, in that area.

Bishop: There is another thing. If your mounding material cut off whatever it was that started the problem in the City of Pasadena and Lincoln Avenue wells, and if the rest of the basin is fairly flat also, you've just moved that over. It could be still just sitting there, somewhere to the east. **Buril:** That's a possibility, but one thing I'd like to point out is that while the City of Pasadena and Lincoln Avenue wells are pumping, anything that is moving east is going to be caught by those wells. So, even though they are public supply wells, they are aiding us in what is a very large effort to clean that area up. It seems to me that if we had a large plume that got cut off and part went this way and part went that way we would start to see contamination in some of the water company wells further to the east of JPL. We have seen nothing.

Nakashima: Those municipal wells are screened over a greater distance than your monitoring wells, which means you would have dilution. **Buril:** That's true. But nevertheless it's a consideration of what we need to do in terms of a remedial action when we're dealing with something like this. If we get into a situation where there's a municipal well in danger, then obviously something needs to be done. It's a question of whether we put in well-head treatment, or something else. If we can't find anything, and

no municipal wells are impacted, I would think that we simply don't have a remedial concern at this time in OU-3.

Robles: This is a real question for us. Take the perchlorethylene, for example. We don't have any, so where is it coming from? They were hoping that we would find that in our wells, so that they could say that we have to bear the cost. We have the deepest pockets. But now they are wondering where this is coming from. In other words, it's a question of who's causing what. Our feeling is that since Altadena and Pasadena are our neighbors and we want to keep good relations, we want to continue monitoring. And if there is a problem or an issue, then we need to address it immediately. We want to keep on schedule so that we can get into remediation. We're all anxious right now to get to remediation so we can start doing something about the problems. But we don't want to do it without any thought. We don't want to make a record of decision that won't be able to stand.

Buril: That's the concept we're laying out at this time. I'm curious to know if there is any immediate response or concern on the part of the agencies. **Swarthout:** I would like to talk with some people about it, but I don't have a strong negative feeling about it. **Robles:** We're in a delay right now, so there is time to think about it and talk with your people. As I said, if you want two sampling events, we'll do it.

Buril: There's another consideration. In September we talked about a combined ROD. If we do go to a combined ROD for all three operable units—which makes a lot of sense—and if we do one sampling of OU-3 with monitoring thereafter, the timing for giving RODs for all three operable units together becomes much more coalesced. You end up spreading all three out to a greater degree. In fact, the schedule actually pulls together rather nicely if we have just one sampling event on OU-3. I think the RODs for OU-1 and OU-2 were due sometime in December of next year. It would be nice if we could have the ROD for OU-3 within a short time after that, rather than extend the schedule three or four months.

Buril: Based on the information we have, and based on the location of the OU-3 wells, intuitively speaking the chances of finding anything in OU-3 are very small. **Bishop:** Taking the data that we talked about today, I have a little more concern on well 21. **Buril:** If you take a look at that, we can probably deal with contamination in that southerly area, if indeed we find that there's a concern there, by placing a system in the southern portion of the Lab and having it appropriately sized, with the a radius of influence sized to deal with that. **Bishop:** That just may put some problems into your joint ROD for next year. **Buril:** Again, this is all in concept at this point. **Robles:** This is living engineering. We have to be very proactive about this, and things are going to be changing. That's why we like to throw concepts out, so that if we ever hit something we will have already talked about it. Again, if we find something strange, we'll have to deal with it. The whole schedule might be blown. We'll have to come to a consensus on it. I'm not as worried about getting ROD and meeting a deadline as I am about making sure that that ROD will be able to pass public scrutiny during the public comment process and address the issues that need to be dealt with. I have seen projects where people have rushed to get to the ROD and then have had to back-peddle very far and redo a lot of their work.

Robles: Any other concerns? Then let's make this an action item—the regulatory agencies will go back and think about this issue of one sampling event versus two events. **Swarthout:** What is the size of the screening on most of those production wells? **Buril:**

They are screened over the entire length, which is probably several hundred feet. **Swarthout:** Are the wells for OU-3 going to be multiport wells? **Buril:** Yes, they are. All five of them.

4. ARARs DISCUSSION

Swarthout: On the two previous projects I worked on, both had huge ARARs fights that ended up delaying both projects at least a year. These fights were really over very minor things, but when you get down to public policy and lawyers it can get way out of hand. **Buril:** I think I can safely say that we don't want the lawyers involved. **Swarthout:** We'll see how lucky we are at avoiding that situation. The other thing that sort of brought this up for me was when we were talking about the Raymond Basin Adjudication. I want to try to give the ARARs "101" talk. An ARAR is a very specific thing, and as far as EPA is concerned there are very specific criteria as to what is an ARAR and what isn't. Also, I want to say some things to the people from the state, because sometimes things get very sticky between EPA and the state. The things I'm saying are EPAs position. I may say something that you don't feel is right. Feel free to speak up. Does everyone have Federal Register issue 40CFR-300, which includes the regulations for CERCLA? This is actually the law—CERCLA. It works this way. Congress writes the law, which directs someone to write the regulations on how the law will be implemented. The first part of the 40CFR is the preamble, which allows the public to comment on the regulations when they first come out. Then the Congress responds to those comments. There will be comments in here, along with responses and any changes that were made. (He describes contents of 40CFR-300.) There is actually a section on federal facilities, Section 120, and a section on cleanup standards, Section 121.

Now, I would like to talk about an outline of a course that was given by several EPA attorneys about ARARs. The first thing I want to do is explain what an ARAR is. ARAR is the acronym for Applicable or Relevant and Appropriate Requirements. There are two parts to this. Something is either applicable or relevant and appropriate. In order to be applicable it has to be substantive. In other words, it has to actually require you to do something. It has to be a cleanup standard or a standard of control or requirements. One thing that EPA does not consider to be substantive is a state requirement or a general requirement that requires you to submit a report, such as a monitoring report. If there is a regulation or law that says you must submit quarterly monitoring reports, that is not an ARAR. That is not considered a substantive requirement.

Robles: How about a requirement of a cleanup level? **Swarthout:** A cleanup level, such as an MCL, is substantive. The second thing is that it must be promulgated. In other words (he reads) "it must be legally enforceable and generally applicable." Legally enforceable means that "the regulation or law contains specific enforcement provisions or is enforceable by means of general authority." Generally applicable means "a regulation is meant to apply to all circumstances, not just to Superfund sites." In other words, if EPA were to have a regulation specific to NASA or JPL, that would not be an ARAR.

Buril: How about such things as AQMD regulations? These look at very specific geographic areas. **Swarthout:** Those types of things have in general been deemed to be ARARs. The regional board gets its authority from the state to make law and regulation, so generally those things are applicable over the whole state. Sometimes, the reality is that the interpretation for each regional board is a little bit different. This is a case where you might not think these are ARARs, but EPA has interpreted them to be ARARs. A lot of what goes into ARARs is interpretation, obviously.

The difference between applicable and relevant and appropriate is that applicable means that the law or regulation applies specifically to the issue. Relevant and appropriate means the law may not be written specifically for that issue, but EPA has determined that it is relevant and appropriate. An example is the MCLs. The MCLs are written for drinking water systems and are actually enforceable at the point of delivery, at the tap. So, when we use MCLs for cleanup, we use them not because they are applicable, but because they are relevant and appropriate. As with applicable laws and regulations, those that are relevant and appropriate must be "substantive and promulgated, must be under federal or state law, and must address a problem sufficiently similar." That's the meaning of relevant. Appropriateness is determined by the judgement of professionals such as EPA attorneys, based on environmental and technical factors at a site. One more thing is that you must meet both criteria. Something must be both relevant and appropriate.

Then there are categories of ARARs. There are chemical-specific ARARs that apply to a specific chemical. There are action-specific ARARs. The most common one is a capping requirement. There isn't a number you have to meet, necessarily, but there is something like a design requirement for a cap. The third kind is location-specific. An example is restrictions on what you can discharge into a wetland. So, that's the different types ARARs.

The next section I'd like you to look at concerns state requirements, particularly at the part on "more stringent requirements than federal." Remedies must comply with State requirements that are more stringent than the Federal. (CERCLA Section 121D-282). The point here is that if there state and federal regulations with the same MCL number, for instance, then it is a federal ARAR. However, if the state number is lower—that is, the requirement is more restrictive—it is a state ARAR. In such cases, you deal with the more restrictive regulation.

Now, let's talk about how, when, and by whom ARARs are selected. On private sites, EPA has much more of an enforcement mechanism. In federal facilities it has been my experience that the ARARs process is much more open, and there is not as big an issue about "well, you didn't give us your ARARs in time, therefore it's too late." I think it's important to realize that this process is for the benefit of all of us. By this, I mean identifying ARARs early, speaking about them openly, and trying to come to resolutions of the issues before we start writing the ROD. All ARAR issues should pretty much be hammered out by the time we write the FS.

Robles: That was one of our questions. I've seen it where the federal facility will ask the regulator to give them their ARARs, and the regulator will ask "what are your alternatives?" But in cleanup, it should not be that way. **Swarthout:** Right. I think now that we have some kind of idea about what kind of contamination we're going to have. We don't know the compounds or levels, but we have a general idea about where we're going, and so we should be able to identify groups of ARARs. The ARARs should be

identified in the FS, with a pretty good ARARs analysis in the FS. The ARARs should be listed very specifically in the ROD. **Robles:** That was a concern for us, too, because a record of decision that just has a list of ARARs can be troublesome when it goes for public comment. What happens is that if an ARAR is listed that does not address anything at the cleanup site, it flags something. **Swarthout:** That's a good point. The ARARs analysis should be very specific. If you have an ARAR that you listed, you should discuss why it's an ARAR, what the ARAR applies to, and any types of levels, etc.

Robles: You give us the ARARs, we analyze them, but if we think there's something else that's applicable, what would be your opinion on that? **Swarthout:** The main thing is that EPA has approval of the selected remedy. Because of that, we also have approval on a lot of the ARAR issues. Actually, I would like to see us work together on that. But EPA has very specific ideas about what it considers to be an ARAR. The state also has some specific ideas about what it considers an ARAR. And they don't always agree. We will most likely be identifying ARARs for you. I don't think NASA has any ARARs. You may have other state laws that you think may or may not be ARARs. I think we will be suggesting things that we consider to be ARARs. EPA and the state may go back and forth over "is it an ARAR" or "is it not an ARAR." There is another thing you often hear about, and that's TBCs, or To Be Considered's. Those are not ARARs. If you decide to adopt a TBC as an ARAR, then it becomes an ARAR.

Robles: To give you some idea of the philosophy of NASA, technically and legally all we have to do is follow NEPA. But this ROD has to go through public comment in California. It is not going to pass public scrutiny if it does not meet CEQA. From that standpoint, the word that I get back from my legal staff at NASA headquarters is that it's not a big deal to meet CEQA requirements, and it's more advantageous to do that. Usually all it requires is three more paragraphs that have to be addressed to make a NEPA document into a CEQA document. So, our position at NASA is that we want to do everything possible to make sure that this ROD can stand public scrutiny and also can be accepted by both the federal and state agencies. And so even if a state requirement isn't an ARAR, we would consider it very strongly if it's needed to get the ROD passed through the system. We want to work this together. We're not in an adversarial relationship.

The only thing we are concerned about is that when a requirement, either federal or state, is put in there—for example, we were looking at the ARARs list, and there is something about TSD facilities requirements (we're not a TSD and we don't want to be a TSD)—do we really want that ARAR in the package? That's a flag to the public. On the other hand, let's say we're talking about the requirements for storage of hazardous wastes over ninety days. We have never gone over 90 days. But the case is, if that happened, we would like that requirement in there to cover ourselves. It's something that technically we don't need to have on the list, but the question might be asked by the public "what happens if you store chemicals from the cleanup action over ninety days?" In that instance, not having that ARAR might present a hurdle. So, those are the kinds of things I look at. I look at the things that are going to allow us to get this through the public comment period. That is why I look at the ARARs.

Swarthout: And those are the kinds of things that, when we write the ROD, we will be negotiating, I'm sure. **Buril:** Let me ask a question regarding our favorite topic,

basin adjudication. If an ARAR is applicable, it means that it needs to be substantive. The question that comes to mind is what constitutes substantive if you get into a situation where you get into this legal requirement to obtain water acquisition rights in a given area? **Swarthout:** That might be something that is considered a TBC. It wouldn't actually be an ARAR. I don't want to say that we don't care what Raymond Basin wants, because we obviously have to take into consideration the issues they have with regard to water adjudication. And we will do that. But those things will not be specifically called ARARs.

Buril: Let's say it's a TBC. In a consideration that remedial action, whatever it may be, may be impacted by the inability to work around the adjudication that has already been developed, is it your position that the TBCs become a secondary issue? If they impact remedial action, are they no longer considered? **Swarthout:** In other words, if the basin said you could not pump the amount of water you needed? **Buril:** Right. And they said they were willing to take us to court over it. **Swarthout:** I'm not 100 percent sure about that. The Superfund law is a pretty strong law, and it allows us access to things that people don't want to give us access to—land, property, etc. I have tried to get an answer for that, and I haven't been able to.

Bishop: We've been involved in similar situations. The issue with adjudicated basins is usually not that you can't have the water. The issue is how much you have to pay for it. That's why it's very important to work as much as you can with the basin management people. You may say that you've hit a stone wall with the basin management, but the reality may be that you just have to pay a lot. From our standpoint, it's still a workable situation. So, we encourage people to get these things worked out, so that you do not end up paying large supply costs.

Buril: The cost is not something I had a real concern about. I don't think that should be a major consideration for NASA, unless we're talking millions of dollars. **Robles:** I know of a site where it got to be horrendous. We were paying three times the going rate. But considering what the site was and what we wanted to clean up, that was acceptable. We budgeted it. But then it started going higher and reached the breaking point where they said we now have to invoke the ARAR. In our case, I think we have an engineering solution to that. We will clean up the water and inject it back in. From that standpoint, we can negotiate with the Raymond Basin by arguing that there is no net loss. **Bishop:** Our experience has been that as long as the loss is minimal it is not a problem for adjudication. In cases where the water is going to be discharged to a line channel that goes out of the basin, that's where they start talking about charging. And usually they will charge you the replacement cost, not the retail cost of the water.

Buril: The Raymond Basin is extremely cooperative, and we have an excellent working relationship right now. In fact, they have even offered in concept that if we have lots of water sitting on the surface with nowhere to go, they'd be more than happy to take it once it's out of the ground. **Robles:** The key may be if we can turn a remediation effort into a water source for them. We're paying the system operating costs, the maintenance costs, and we might just give the water to them to put in their reservoir.

Robles: My concern, as with you, is that I have seen dogfights. The thing seems to be that the Federal facilities always want a bare minimum of requirements. I've always felt differently on that, because I've been fortunate enough to have some far-thinking lawyers. An example is that you cannot transfer contamination from one media

to another. That's why clean air is such a big deal. You can't just air strip and then vent it out into the air. So that's a big ARAR that has to be met.

Robles: The specifics are the biggest concern. I don't think we will have any problem accepting the ARARs. It's the specifics of these ARARs that are the question—what is applicable and what is not? What are the actual requirements and how do we fulfill them? My understanding is that the ARARs were developed to speed the process of remediation in the sense that you would not have to go through the process of getting permits, etc. This is where I think we are going to have the biggest problem—not from you guys, but from other regulatory agencies that need fees. We can say that we will do everything possible to avoid taking contamination from the ground water or the ecosystem and venting it out into the air. Then the South Coast Air Quality Management District may say "we want a fee, that means an air permit." That's the key issue—where does EPA stand on those kinds of things? According to the way I read CERCLA, you meet the intent of the law. There are no fees that need to be paid for CERCLA, but there is a question in the state right now about CERCLA/RCRA/Clean Air Act interface. And that represents, potentially, a lot of money for the state in these hard fiscal times. If we have to pay those kinds of fees, then how do they play out in the emissions credits that you have? So, it's those specifics that I'm concerned about. Not that we have to follow the California Clean Air Act or the federal Clean Air Act.

Nakashima: In the San Fernando Valley, many times the locals can hold up your progress, so in some cases they are just going ahead and paying the fees to get the locals off their backs. That's one way to handle it. And the fees are not that great.

Robles: But then the question arises: suppose we had put in well-head treatments, for example. Do we have to pay a fee for each well? Now, if it's not too expensive, then we won't argue, but if it gets to be horrendous, then what do you do? I mean, we can say: "sorry, guys, this is a CERCLA cleanup, and we're not going to pay the fees." We have that right. The locals may say that we have to close the site, and our reply is that they have to talk to EPA.

Swarthout: EPA might have a law or reg, but when you get to a local level, even though you can tell them that you don't have to pay fees, they can make a stink and go to the local papers and tell the people, etc. Is it worth going through all of that? **Bishop:** The only experience I've had of that was with EPA involving some discharge that would have required an NPDES permit. Their response was to write a letter saying that they would meet any requirements for discharge, but that they were not applying for the permit, were not waiting for it to be processed, and were not going to pay the fee. The fee, for us, is very minimal. Our fees are minute. But the time to get a permit processed is probably six months.

Swarthout: That's an example of where you would have to meet the substantive requirements of the permit, but in theory you don't have to apply for the permit, wait for it to be processed, or pay the fee. **Buril:** Here's a question for you. Suppose there is a requirement for a public meeting process as part of the permit acquisition. Would there be a requirement to have a public meeting regardless? **Swarthout:** I would think in our case probably not. **Buril:** I'm thinking specifically of the Air Quality Management District, where you get into air strippers, etc. While we don't apply for the permit, if we follow the substantive requirements for getting that permit it would require a public meeting.

Robles: That's one of the specifics. Once you start saying that you are going to obey the intent of the law, but you're not going to get the permit or pay the fee, that's where I see most ARAR fights happening. And the cost is not the big deal, but the time. It's life or death today for those people like South Coast Air Quality. They are going to fight tooth and nail to get all the money they can get. And it may not be a lot now, but twenty years down the road, when we're still remediating, it may be a big cost.

Swarthout: (Presents "fact sheet" on ARARs; "Permits and Permit Equivalency Process for CERCLA On-site Response Actions"; memos on EPA policy.) Regarding the memos, they change, so don't assume that things are still the way they read here. You need to ask me. (Presents "Drinking Water Standards and Health Advisory Table.") This is a really good compilation of standards, ARARs, TBCs, etc., and it is updated every quarter. This table is for Region 9.

Robles: My concern is that we have a whole litany of lists here. But we do not want to list the whole thing as it appears here. **Swarthout:** That's right. You do not want to include this list in your ARARs table. You just want to pick the things out of here that you need. **Robles:** If the MCL levels change up or down, I assume the ARARs have to be updated. **Swarthout:** Yes. But if you write your ROD and then the MCL levels change, I'm not sure what has to be done. **Bishop:** I was just reading one of your things here, and it seems to indicate that once the ROD is signed, it freezes the ARARs. **Swarthout:** That's right. Once the ROD is signed, it freezes the ARARs. **Buril:** In other words, if the limit goes up, we're still going to be required to remediate to the older, more stringent standard. **Swarthout:** Yes. The ARARs freeze when you sign the ROD, and some people may tell you that there is no negotiation, but my understanding and my experience are that all of those things are negotiable. In other words, there are ways you can amend the ROD.

Robles: Let's say you do a remediation and two years down the road the standard changes upward, becoming less stringent. That may have significance because now you could say "I can shut this pump off, because the levels are never going to be that high." On the other hand, if it goes down, what you have may be technologically impossible. But the public may say "hey, you have to meet that." It's a concern because now you're cleaning up a site that is never going to be cleaned to the new MCL levels. How would we deal with that type of situation?

Swarthout: I wouldn't lose any sleep over it until it happens, because MCL levels don't change every six months or every year. **Robles:** I'm just worried about the person out there who is going to ask for non-detect. **Buril:** And that's very possible in our locale here, where there are a number of activist individuals and groups that get involved. **Robles:** With the advance of technology, you're able to drop the sensitivity levels in lab analysis, and that can be a real problem, costing a lot of money in remediation. **Bishop:** I don't think you should be concerned about public reaction to cleaning up to non-detect. First, it's technically not feasible. The normal argument is that you just can't do it. You may still have a few people who are upset about it, but you can't address that argument. There is nothing you can do or that we can do as agencies to enforce on something like that.

Swarthout: (Presents "Region 9 Preliminary Remediation Goals.") These are put together by Stan Smucker, one of EPA's toxicologists. If you open to any of these tables, you see that they say "For Planning Purposes." These are not promulgated, these are not in regs, and they are not really policy. These are just something we have been

using recently in Region 9 for screening purposes. They are used mainly for the risk assessment. (Explains tables.) You can use these numbers to get a general idea, for screening purposes, of what the risk is going to be. (Gives example from table.) You can screen out things based on these PRGs.

Buril: How well accepted are these by the state? **Nakashima:** Our department has said that they do not take into consideration at least one factor, so they do not accept these as final. **Swarthout:** I don't know about that. We like to use them for screening purposes. We don't dismiss sites because they are below the PRG. At every site we need to have an explanation of why we might consider the site not to be a risk. There may be other factors at the site that make it a risk, even though it is below the PRG. Or, there may be factors that make it not a risk even though it is above the PRG.

Buril: Under the PRGs it lists "tap water." Is tap water considered to be ground water? **Swarthout:** I think it is, but I'm not 100 percent sure. **Robles:** Would you find out for us? **Swarthout:** Yes, I will. **Robles:** That would be very helpful, because it will help with our screening. The eco-tox is the real killer—the plants and animals. It's going to be very tough to mesh those two together. **Swarthout:** In the document there is an explanation of how these should be used. Also, these get updated. (Presents "list of fact sheets that EPA has available.") These are put out by Deborah Samuels, whose phone number is on the list.

Buril: Suppose we wanted to send one of these to our mailing list. What is EPA's policy on that? **Swarthout:** I think that would be OK, since they are public documents. In fact, there is a fact sheet on how to prepare a proposed plan, and I recommend that you get it and follow it word-for-word. It tells you exactly what you need to include. There are even little boxes on the fact sheet, so that when you include each item in your plan you just check it off. I have seen proposed plans from bases that were miles long, and miles too long. There are very specific requirements for proposed plans that need to be met, and they are all explained in the fact sheet. A lot of these fact sheets are summarizations of the guidance documents. (Further explanation of the fact sheets he handed out.) I recommend that you obtain these fact sheets and use them. In fact, I use them in reviewing documents, and it makes things a lot more standard.

Swarthout (cont'd): (Presents ARARs tables prepared for George AFB.) This is, in general, how I would like to see the ARARs presented. This was approved by my attorney for George AFB. I have not shown this to my attorney for NASA, and she may have a different idea, but I think something like this is acceptable. (Explains tables.) I like to see both a table and some text. You can get away without the table, but if you have a table you have to have text explaining each ARAR. In general, I'm willing to provide you with anything I can to make your life easier, because that makes my life easier. For example, I can give you a copy of this ROD. **Robles:** That would be helpful. From what I heard, the George AFB ROD was a model of what a ROD should look like. **Swarthout:** Yes. Once we got it all straightened out, the ROD went very quickly. **Buril:** Let's make it an action item that Brian will supply us with a copy of the ROD for George AFB.

Swarthout: I'm sure it's OK that I give you a copy, but I want to show it to my attorney, because it's a different attorney and they all have different ideas of what they want. (Presents "rules-of-thumb of what RODs should contain.") I didn't bring Karen down, because I can do most of this. When it comes to specific questions about whether

something is an ARAR, etc., we'll get Karen involved. **Buril:** This information is going to be very useful, and it should help us to answer a lot of our own questions.

5. Schedule for Next RPM Meeting

Buril: I'm not sure we will have significantly more to talk about until after the latter part of January. By then, we'll have some of the information coming back from the soil vapor sampling. The sampling is scheduled to start in the middle of December.

(Discussion followed. Date of next meeting set for February 1, 1995.)

6. Status of Previous Meeting Action Items

Buril: Going back to the August meeting minutes, I believe that all of the action items previous to that had been closed. I'll run through them, however. The following have been dealt with:

- NTU guidelines from RWQCB.
- Impact of turbidity on analytical results.
- Agencies' comments on Fact Sheet #4.
- Hank Yacoub added to Fact Sheet #4.

Buril: Penny was then going to provide input on soil vapor maps. Did you have time to work on that? **Nakashima:** I was going to wait until I started looking at the data. **Buril:** I guess we'll just drop this from the list for now, then. Next was the action item regarding legal information on ARARs. We now have material from Brian, so we can drop that one. With regard to the agencies' responses to the OU-1 change letter, I think we have received everything. But I'd like to ask both of the agencies from the state to check to make sure you've officially signed off on the modification to the schedule that was discussed in June. That will close that loop.

Buril (cont'd): That's it for the action items from the previous meeting. Now for those that came out of the last meeting. Gail was going to get back to me regarding adjudication. I don't believe I've heard anything from her yet. **Bishop:** In terms of what? **Buril:** In terms of its applicability to the remedial concerns. I think it will be, as Brian indicated, a criterion "to be considered." **Robles:** Brian's comments on that seem well-taken, but the issue that comes up is how the water board would feel if we had to pull out water and we couldn't re-inject it again. How does this play with them? Could they shut us down or not, and how do they feel about that? Granted, that is a worst-scenario case. I think that we can work around it. **Bishop:** I can check with our lawyer on it. We can't make a decision on that unless it becomes a problem, but in general there are a lot of options. You can import water, you can pay for the water, etc. All I can say is that I will talk with our lawyer about it.

Buril: Prior to the meeting today, the agencies were going to develop and compare their ARARs lists. Apparently that never came together. Gail sent me the ARARs that were sent to you, Penny, and we got out your letter that was dated a little more than a year ago on ARARs. Have you people from the agencies had a chance to

discuss concerns among yourselves? **Swarthout:** Not really. We need to do that. **Buril:** Then I'm going to request that we leave that action item open until February 1. Lastly, we were going to provide you with the schedule for OU-3 and the schedule for the comprehensive ROD. Given the issues discussed today on OU-3, we need to hear a little more back from you people on the concept of reducing the round of sampling for OU-3. Once we have that in hand, we can generate a schedule. Also, I think we got something back from Dan Stralka on the outline for the Exo-Tox. **Swarthout:** Yes. You submitted an outline, and I know we commented. **Nakashima:** You should have gotten something from us yesterday. **Buril:** We haven't seen that yet, unfortunately.

Buril (cont'd): With regard to eco-tox, I know that Laura and Craig and you (Nakashima) went around the Lab. I am curious to know if anything came up after that tour. **Nakashima:** Laura's biggest comment was to focus the assessment on the proposed park and what species will be inhabiting the park and coming down from the San Gabriels into the park, since that is a migration corridor for water. **Robles:** It sounds like she is recommending that we determine the pathway of exposure for the animals that will be going through there. **Nakashima:** That's part of it. **Buril:** In the EIR for the park, which I know is still coming, isn't that something that they should be addressing? **Nakashima:** Yes. And you could work with the City of Pasadena to get that information. You should also include that in your own eco-assessment.

Robles: The only concern I have on that comment is that we don't control that. I've asked my NASA lawyers about it, and they are kind of concerned. I understand what she is saying. The Arroyo, the park, and the Lab are so closely tied from an ecological standpoint that we may need to, but to pin our ROD on theirs - that's a big question, and I don't know if we're going to have leverage on anything that they find there. **Buril:** If they put out a negative declaration, we're going to have a difficult time aside from going to them and saying "we disagree with this, and you need an EIR." This would precipitate a political battle in that regard.

Robles: If they show a negative declaration, we have a conflict. They are looking at putting this project in, and I think they will come up with a negative declaration. I think they will do everything they can to make sure this project will fly through. We don't see it that way, because we do have animals going through there. But we do not have control over the water in their park.

Buril: Let me add something that may or may not shed light on what the city may be doing. They basically see the construction of this lake as a cleaning out of the dam basin. As a result, there was no EIR, no EA, nothing, for the work that is presently going on. In other words, they are viewing it as routine flood control maintenance. I'm not sure the city is planning on that, but it gives a possible indication of where they may be coming from. If they come across with either a nothing or a negative determination, then we have a real concern. Suffice it to say that we do have a fairly good relationship with the environmental coordinator for the City of Pasadena and even with the Water and Power Department that operates the water treatment plant and the pumps. I don't anticipate there being an adversarial relationship at all, but I think it is important that we recognize where the responsibility lies for providing the information that Laura identified earlier. And whoever has that responsibility should coordinate with the others up-front, before it becomes a crisis.

Bishop: When you're talking about the water that they have in that lake, are you concerned that it is coming from your ground water? **Buril:** No. **Robles:** It comes from

everyplace around here. **Bishop:** If it's not contaminants from your site that are causing concern in the water, then it's not really your responsibility. If it is your stuff, then you do have a responsibility, and it doesn't matter if they do have a negative declaration on it. You're still responsible for it because it came from your site. **Robles:** The water for that lake will not be totally ours. We may have some impact, but in the scheme of things it will be a small percentage. Then the question arises as to the percentage of responsibility for the risk.

Buril: My understanding is that the lake is basically going to be a noncontaminant issue. The runoff coming into the Arroyo from the JPL site is really very clean. We have the data behind us now from samples of our outfalls, so we know that you could drink the stuff as it comes from the outfall. I don't know the situation for the City of Altadena storm drains that wash into the Arroyo or whether there are any contamination issues upstream in the Los Padres National Forest. Nevertheless, it becomes a concern regardless of whether there is a contaminant issue or not. There is an ecological issue for the animals that are now going to be using the Arroyo and the lake at the bottom of the Arroyo as a water source and the corridor of migration to reach that source. In all likelihood, JPL is going to be in that corridor. Whether the responsibility for assessing the impact of establishing that corridor lies with the City of Pasadena or with JPL is the gray area that I'm trying to understand.

Bishop: The concern, then, is the animals moving through JPL? **Buril:** Yes. **Bishop:** If you have animals moving through contamination on site, then that is your ecological toxicity issue to address. **Robles:** We have no problem with that. But then you also bring the lake into that eco-tox. **Buril:** Across the site is one issue. As they exit the site and end up at the lake, that is a second issue. **Swarthout:** If you have a pool of goo over here by a building and animals are coming across the site, through the pool of goo, and on to the lake, then you have responsibility to make sure the animals avoid the contamination.

Buril: One of the things we should look at, in bringing a more site-specific consideration to this, is that we have nothing on the surface that is a concern as far as contamination goes. So, a surface exposure is a negligible consideration. Given this, when we think of animals wandering through the site, do we still have to deal with the issue you raise? **Swarthout:** I'm a little confused, but if there's no contamination, then it shouldn't be a problem. **Buril:** Then is there really an issue for us to deal with? **Swarthout:** I think not. Our concern is with animals crossing a site and being exposed to contamination. The other thing is if there is ground water contamination from the base that is going into the lake, and the animals are drinking there and dying. **Buril:** Actually, neither of those scenarios are possibilities at this time. We have no plans to pump water into the Arroyo, and due to the adjudication issue we would consider pumping water into the Arroyo either treated or untreated as being out of the question.

Swarthout: For us, then, I don't think there would be too many issues. **Nakashima:** One other issue may be the past disposal practices. In other words, was anything disposed of in the Arroyo in the past? I'm just referring back to those letters between the City of Pasadena and JPL. **Buril:** I don't recall anything except aluminum silicate being disposed of in the Arroyo. **Nakashima:** There was a reference to 600,000 gallons of TCE contaminated water being released. Well, there has been no soil investigation in the Arroyo area. **Buril:** I believe there was some work done that said,

basically, we don't have a problem out there. That's why we haven't proposed doing any additional work. Am I correct on that? **Cutler:** A few surface soil samples were collected. I think two, and then one up north of the bridge for background.

Nakashima: I will have to look at that data. That could be presented in the assessment, also. **Cutler:** It was more of a general scan or recon. **Buril:** We're still under the impression that we are dealing with subsurface considerations from seepage pits, etc., and the possibility of having any kind of discharge via soil or water is negligible, at best. **Nakashima:** There was also some discharge from the cooling towers. The City of Pasadena took samples and found out there was chrome at one of the layers. So, there were a number of things that the City of Pasadena had identified. **Buril:** One thing I would say is that if we're talking about a small discharge that happened forty or fifty years ago, trying to find anything today might be wasting our time.

Buril (cont'd): Well, anything else? Okay, what action items did we have from this meeting? **Novelly:** One is for me to send copies of the soil vapor well table. I can type that up and mail it out. **Swarthout:** A xerox of the handwritten table is fine. **Novelly:** Brian is going to get back to us on whether tap water is really ground water in the PRGs, and he is going to send us a copy of the ROD for George AFB. **Buril:** There is an additional action item dealing with the concept of whether there should be one sampling round for OU-3. We would like the agencies to get back to us as quickly as possible so that we can develop a schedule for OU-3.

Swarthout: About the tap water, I think that when you do the risk assessment for ground water you assume that the concentration you have in the ground water is the same concentration you're going to get in the tap water. That's why I think it says tap water here. In other words, they consider the point of exposure to be the tap. I'll find out for sure and clarify that. Speaking of ground water, how long is the sampling going to take? **Buril:** Five weeks, isn't it? **Swarthout:** Is it going on now? **Buril:** Right now. It started this morning. **Swarthout:** I might want to come here and watch that some time, maybe one day next week. **Novelly:** Are you interested in specific wells? **Swarthout:** No. Just any of the multi-port wells. **Buril:** Talk to Penny. She can tell you how exciting multi-port sampling is. **Randolph:** It's like watching grass grow.

Meeting adjourned.